United States Department Of Agriculture | Forest Service | Shasta-Trinity National Forests

Reply To: 3420 Lat 40.74883 Lon -122.11720 Date: November 1, 1989

Subject: Biological Evaluation of Pest Conditions in Croxford Timber Sale, Shasta Lake RD (Rept. No. N89-23)

To: Forest Supervisor, Shasta-Trinity NF

On October 16, 1989, Dave Schultz, entomologist, and I visited the proposed Croxford timber sale (T. 33 N., R. 2 W., section 5) on the Shasta Lake Ranger District with Blaine Baker, District TMO. The sale area covers approximately 150 acres.

The existing stand is primarily a ponderosa pine overstory, with ponderosa pine, Douglas-fir, sugar pine, and black oak in the understory. Some of the area lacks a pine overstory and has a dense understory of the above species. Shrub species present in the area include black oak, whiteleaf manzanita, poison oak, deerbrush, and gooseberry. The general prescription for the area is to harvest the merchantable overstory and save as much understory as possible, especially Douglas-fir and healthy ponderosa pine. Some precommercial thinning of dense aggregations will be necessary. Openings will be created that will need to be regenerated.

The overstory pine is heavily infected by western dwarf mistletoe (Arceuthobium campylopodum) in parts of the area. This is leading to infection of understory pine in these areas. Infections extend into stands surrounding the sale area. Little white pine blister rust (caused by Cronartium ribicola) was seen on sugar pine or Ribes.

The prescriptions for the stands and the timber sale can reduce the future effects of dwarf mistletoe and improve the long-term health of the vegetation. Lack of activity in these stands will result in increasing levels and spread of dwarf mistletoe and increased tree mortality, especially of ponderosa pine. The resulting stands will have larger components of Douglas-fir and black oak in an overstocked and unthrifty condition.

Several concerns were expressed about specific situations and the need for special prescriptions in some aggregations to deal with dwarf mistletoe in the sale area.

The first situation is where there is dwarf mistletoe-infected overstory pine and a mix of ponderosa pine, sugar pine, and Douglas-fir in the understory. The stocking and species mix of the advanced regeneration should be evaluated to determine if an adequately stocked stand will exist following overstory removal. If not, then the site should be prepared and planted with a species mix. If adequate stocking will remain, then precommercial thinning may be

required. Criteria for determining cut trees during thinning should include the removal of any ponderosa pines with dwarf mistletoe ratings of 3 or higher.

A similar situation exists in other aggregations, except that bordering stands also are infected by western dwarf mistletoe. Where infections occur in the adjoining stand, removing the overstory pines from the sale area will not be sufficient to reduce the impact of dwarf mistletoe in the advanced regeneration. Depending on stocking of non-hosts in the regeneration, either the site should be cleared and planted or the site should be precommercially thinned. If the site is planted, then the species mix should be adjusted to favor Douglas-fir over ponderosa pine. Where there is adjacency with infected stands, the proportion of Douglas-fir should be increased to comprise about 60-70% of the planting mix. As distance from the adjoining stand increases, the proportion of ponderosa pine can be increased. Sugar pine may be added to the mix to increase species diversity, but the proportion should not exceed 10% in any area because of blister rust. If the site is precommercially thinned, then Douglas-fir and sugar pine should be favored in areas where infections from the overstory might occur. Where overstory infections are not likely, then cut tree criteria should include removal of ponderosa pines with dwarf mistletoe ratings of 3 and higher. Also, residual stocking should be adjusted upward to account for the possibility of the loss of some sugar pine to blister rust prior to its becoming merchantable.

A third situation is where there is a dense stand of sapling to pole-size conifers with no overstory. Low levels of dwarf mistletoe may be present in the ponderosa pine. The prescription for this situation is to precommercially thin the stand. This is appropriate even though dwarf mistletoe may be present and will not be eradicated. When developing cut tree criteria, any ponderosa pines with a dwarf mistletoe rating of 3 or higher should be removed. Lower infection levels can be tolerated as long as ponderosa pines are not underplanted and the advanced regeneration is expected to annually grow 8-10 inches in height.

The possibility of pruning infected ponderosa pines to remove dwarf mistletoe following precommercial thinning was also discussed. Past experience suggests that pruning to eradicate dwarf mistletoe usually can not be accomplished unless infection levels are low. Even then, multiple treatments will be necessary to achieve eradication. In this situation when a single story stand is being managed, there is little benefit from such a treatment. Low levels of dwarf mistletoe cause little if any impact and well-managed stands should maintain growth levels that exceed the vertical spread and intensification of the mistletoe. Pruning to reduce the level of dwarf mistletoe in a stand may provide some benefit where trees with moderate levels of infection must be retained to provide adequate stocking. In this case, removing infected limbs may reduce the development of witches' brooms and the impact of infection. This is less economically efficient than removing the tree, but may be necessary when options are limited. If pruning is considered, it would be advisable to wait 2-3 years following precommercial thinning to allow latent infections to develop shoots. Although some new infections may occur during this period, release treatments usually accelerate mistletoe shoot development from latent infections in greater numbers than new infections will occur.

Concern was also expressed about the timing of harvest, slash treatment, and the possibility of insect buildup that would threaten the advanced regeneration. Accumulations of larger diameter (≥ 3 inches) pine slash could serve as breeding material for pine engraver beetles (Ips spp.). Large populations of these insects in a localized area can threaten residual pines. Several options are available to reduce the threat. These include:

1) Limit the harvesting period to July through December.
2) Utilize material to the smallest diameter possible.
3) Lop and scatter all material ≥ 3 inches diameter.
4) Crush and break up slash with logging equipment.
5) Keep larger pieces of slash away from residual pines.

If you have any questions or want additional assistance, please contact Gregg DeNitto (916-246-5101) or Dave Schultz (916-246-5087) in the S.O.

Gregg DeNitto

GREGG DeNITTO
Northern CA FPM Service Area